NPS Form 10-900
OMB No. 1024-0018
(Rev. 10/90)

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

1. **Name of Property**

Historic name: N/A

Other name/site number: Sand Creek Truss Leg Bedstead Bridge (preferred); 69-LT-22

2. **Location** On Road Y, 0.5 miles west of intersection with Route 283; 2 miles north of Route 9 and 6 miles northeast of the town of Lenora.

not for publication

city or town Lenora X vicinity

state code KS county Norton county code 137 zip code 67645

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this **XX** nomination ___request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property **XX** meets does not meet the National Register criteria. I recommend that this property be considered significant ___nationally **XX** statewide ___locally. (___ See continuation sheet for additional comments.)

Richard D. Pankratz — Signature of certifying official

4-09-03 — Date

KANSAS STATE HISTORICAL SOCIETY
State or Federal agency and bureau

In my opinion, the property ___meets ___does not meet the National Register criteria.
(___ See continuation sheet for additional comments.)

Signature of commenting or other official — Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is:

___ entered in the National Register.
___ See continuation sheet
___ determined eligible for the National Register.
___ See continuation sheet
___ determined not eligible for the National Register.
___ removed from the National Register.
___ other, (explain:)

Signature of Keeper — Date of Action

5. Classification

Ownership of Property	Category of Property	No. of Resources within Property	
		contributing	noncontributing
___ private	___ building(s)	____	____ buildings
_X_ public-local	___ district	____	____ sites
___ public-State	___ site	____	____ structures
___ public-Federal	_X_ structure	1	____ objects
	___ object	____	0 Total
		1	

Name of related multiple property listing:
(Enter "N/A" if property is not part of a multiple property listing.):

Metal Truss Bridges in Kansas

No. of contributing resources previously listed in the National Register

0

6. Functions or Use

Historic Functions (Enter categories from instructions.)	Current Functions (Enter categories from instructions.)
TRANSPORTATION: Road-related (vehicular)	TRANSPORTATION: Road-related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions.)

OTHER: Truss Leg Bedstead

Materials
(Enter categories from instructions.)

Foundation Steel, Concrete

Walls

Roof

Other Metal: Iron, Steel

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

____ A Property is associated with events that have made a significant contribution to the broad patterns of our history.

____ B Property is associated with the lives of persons significant in our past.

_X_ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

____ D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations (Mark "x" in all the boxes that apply.)

____ A owned by a religious institution or used for religious purposes.

____ B removed from its original location.

____ C a birthplace or a grave.

____ D a cemetery.

____ E a reconstructed building, object, or structure.

____ F a commemorative property.

____ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions.)	Period of Significance	Significant Dates
ENGINEERING	1906	1906
TRANSPORTATION		

Cultural Affiliation

N/A

Significant Person	Architect/Builder
N/A	Canton Bridge Company (Canton, Ohio)

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____ previously determined eligible by the National Register
____ designated a National Historic Landmark
____ recorded by Historic American Buildings Survey # _____
____ recorded by Historic American Engineering Record # _____

Primary location of additional data:

_X_ State Historic Preservation Office
____ Other State agency
____ Federal agency
_X_ Local government
____ University
____ Other
Specify repository:

10. Geographical Data

Acreage of property <1 acre

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
1	14	4/2/2/7/6/0	4/3/8/9/5/0/0	3	/	/ / / / /	/ / / / / /
2	/	/ / / / /	/ / / / / /	4	/	/ / / / /	/ / / / / /

___ See continuation sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Kerry Davis, Architectural Historian & Elizabeth Rosin, Partner

organization Historic Preservation Services date August 5, 2002

street & number 323 West Eighth Street, Suite 112 telephone (816) 221-5133

city or town Kansas City state Missouri zip code 64105

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black-and-white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items.)

Property Owners (Complete this item at the request of the SHPO or FPO.)

Name County of Norton

street & number 105 S. Kansas, P.O. Box 70 telephone 785-877-5740

city or town Norton state KS zip code 67654

DESCRIPTION

LOCATION AND SETTING

The Sand Creek Truss Leg Bedstead Bridge is located 6 miles east and 2 miles north of the town of Lenora in north central Kansas, on the east-west section line between the NW ¼ of Section 3, Township 5S and the SW ¼ of Section 34, Township 4S, Range 23W. The region is defined by rolling prairie hills with tree-lined creeks. The Sand Creek Truss Leg Bedstead Bridge carries Road Y across Sand Creek, which is a meandering, intermittent branch of the North Fork Solomon River. The dirt roadway, flanked by fenced pasture, aligns directly with the Sand Creek Truss Leg Bedstead Bridge.

TRUSS TYPE

The Sand Creek Truss Leg Bedstead Bridge is a single span pin-connected pony truss[1] that measures 64 feet in length and 16 feet in width.[2] Timber piles and plank retaining walls form the abutments that support the approach grades. The abutment side walls extend approximately 10 feet along the roadway. The vertical end posts extend below the end floor beams to form the characteristic "legs" of the Truss Leg Bedstead design. These legs are embedded into poured concrete foundation pads.

The long vertical end posts rise from the poured concrete foundation pads and meet the horizontal top chords to form a rectangular shape. The top chords and end posts consist of two channels, a cover plate, and lacing bars; the bottom chords consist of two flat eye bars.

The web members include vertical posts that form four equivalent panels and diagonal ties, which intersect within the two central panels. Angle stock and lacing bars compose the vertical posts; flat eye bars and tension rods compose the diagonal ties.

The timber deck is 16 feet wide and rises 12 feet above the creek bed on timber stringers. Floor beams located at the base of each vertical post are connected by lower lateral bracing rods.

The paired historic parallel angle bar guardrails are intact along the length of the truss. A damaged, rectangular cast iron plaque located on the northwest vertical end post reads "…CANTON / BRIDGE CO. / CANTON OHIO." Letters in relief read "JONES & LAUGHLINS" on several structural components.

INTEGRITY

The Sand Creek Truss Leg Bedstead Bridge is an excellent example of this bridge type, historically popular in Kansas.[3] With no apparent alterations made to the original design or materials, the Sand Creek Truss Leg Bedstead Bridge retains a high degree of integrity. The original workmanship, materials, design, setting, and feeling of the structure are readily apparent. Furthermore, the potential for preservation of the bridge is high. Located on a lightly traveled road, it is unlikely that traffic requirements will necessitate alteration or replacement.

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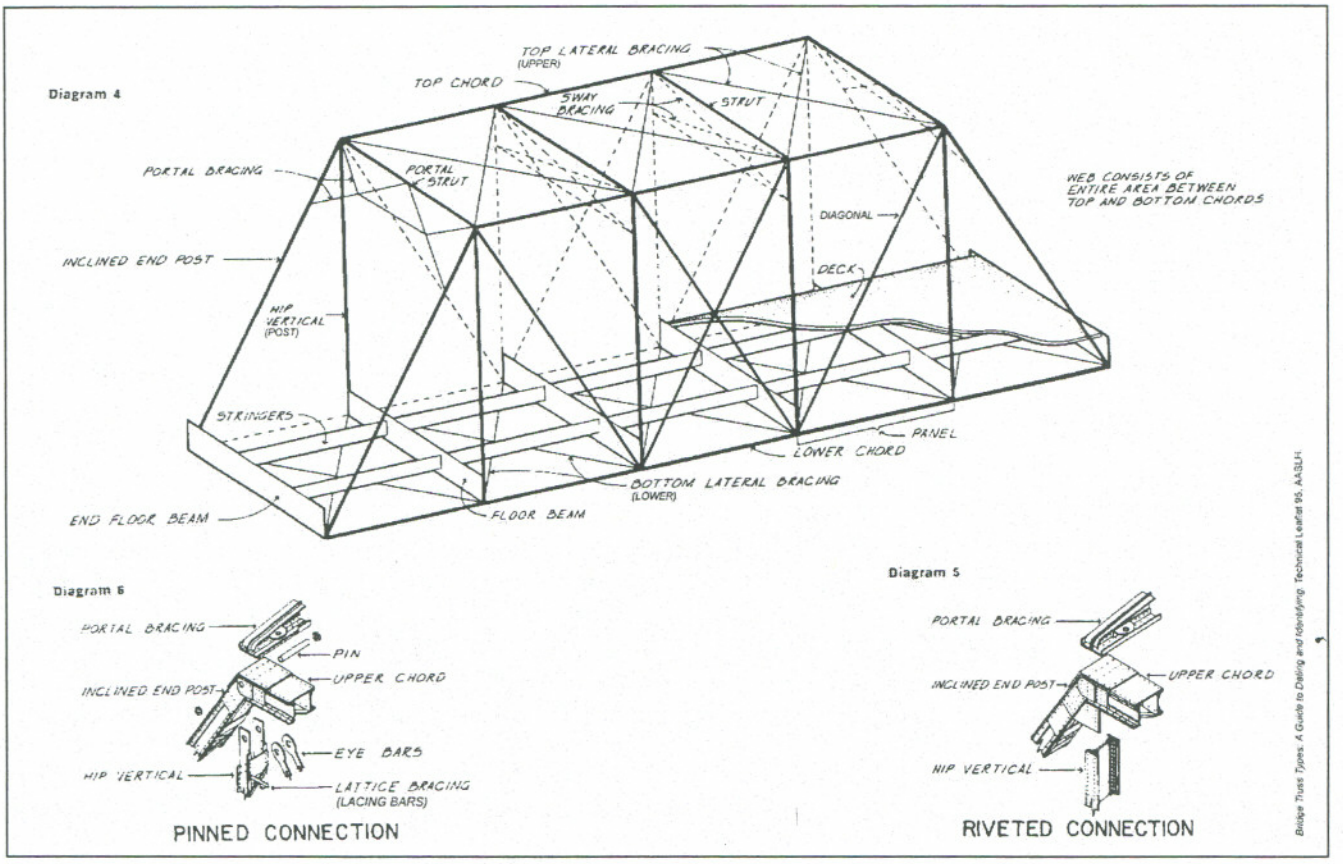
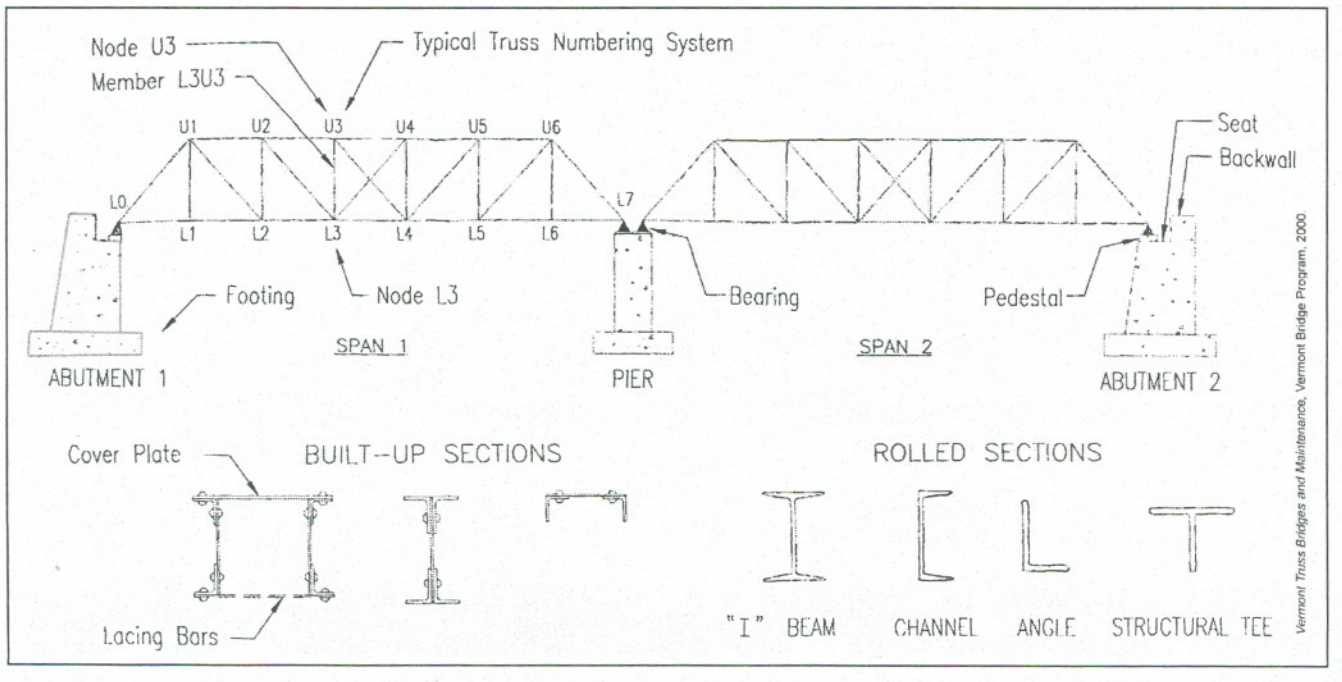
[1] A pony truss is also referred to as a low truss.
[2] The length equals the distance between abutments; the width equals deck width.
[3] Dale Nimz, *Activity III Review Initial Assessment Metal Truss Bridges.* (Topeka: Kansas State Historical Society, 1998), 6. Nimz identifies approximately 375 extant Truss Leg Bedstead bridges in Kansas.

TRUSS TERMINOLOGY





STATEMENT OF SIGNIFICANCE

The Sand Creek Truss Leg Bedstead Bridge is significant under National Register Criterion C in the areas of Engineering and Transportation. As defined by the *Multiple Property Documentation Form for Metal Truss Bridges in Kansas*, it is an excellent example of the Truss Leg Bedstead bridge type. Built in 1906,[1] the Sand Creek Truss Leg Bedstead Bridge is an example of a common bridge solution applied to a relatively short span. Its pin-connected structure, timber deck and abutments, coupled with poured concrete foundation pads illustrates the technological transitions taking place during the period of significance. As no historic name identifies this bridge, the preferred name "Sand Creek Truss Leg Bedstead Bridge" has been assigned. This describes the location, design, and function of the structure.

ELABORATION

The need for all-weather crossings of rivers and streams corresponded to the growth of the market economy across Kansas during the late nineteenth and early twentieth centuries. Bridges provided farmers easy access to markets and could make the difference between growth and stagnation for the many small, young communities across the state.[2] Proximity to a bridge often secured a town's economic stability, and it contributed to a local sense of modernity.

Prior to the 1930s, the railroad was the primary means of long-distance travel and there was little need for roads to extend more than a few dozen miles. With little stimulus for improving roads that would cross multiple jurisdictions, road construction and maintenance remained local concerns. County commissioners often carried the burden of selecting bridge locations, over which much contention was common.

The range of choices for bridge designs and companies was vast. Many of the larger bridge companies sold metal truss bridges through mail order catalogues. County commissioners could simply specify the span, clearance needs, and truss type (if there was a preference), then choose the lowest bidder from the numerous competing companies that had salesmen in the field.

By the late nineteenth century, fabrication of iron and steel was widespread. The speed of construction and the relatively low cost of metal truss bridge parts ensured their popularity over labor-intensive masonry bridges and short-lived timber bridges. Toward the end of the nineteenth century the quality, quantity, and cost of steel improved to a degree that it virtually replaced wrought iron for bridge construction by 1910.[3]

Most metal trusses were constructed of built-up members composed of mass-produced, standard-shaped channel, plate, and angle stock purchased from one or more of the numerous steel companies nationwide. The bridge companies preassembled trusses in their factories then simply shipped them to the bridge site for installation. Installation involved grading approaches, constructing abutments and piers, erecting preassembled floor and truss members, and placing deck material.

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[1] Norton County Road and Bridge records, Norton, Kansas.
[2] Larry Jochims, *Metal Truss Bridges in Kansas 1861-1939, National Register of historic Places Multiple Property Documentation Form,* (Topeka: Kansas State Historical Society, 1989), E..
[3] Ibid, F.

Before 1900, generally all panel point connections – the locations at which structural bridge elements intersect – were made with the use of a pin. This technique was so widespread that it became one of the distinctive features of American bridge construction in the nineteenth century.[4] However, subsequent advancements in pneumatic riveting techniques greatly improved rivet installation quality, enabling more reliable panel point connections. With the increased portability of this construction technology, the more rigid riveting technique rapidly surpassed pin-connected bridge construction during the first years of the twentieth century. The pin-connected construction of the Sand Creek Truss Leg Bedstead Bridge is a relatively late example of this once standard technique.

In addition, the contemporary development of economic cement production promoted the widespread combination of steel and concrete in bridge construction. It was not uncommon for older metal truss bridges to receive new reinforced concrete decks or poured concrete reinforcements for older stone abutments. By the 1920s, reinforced concrete was the standard material for abutments, piers, and decks of steel truss bridges. The combination of timber abutments and poured concrete foundation pads at the Sand Creek Truss Leg Bedstead Bridge illustrates the transition in construction technology and materials that occurred during the period of significance.

The Sand Creek Truss Leg Bedstead Bridge is a classic example of this truss design. The Truss Leg Bedstead is a variation of the Pratt truss. Patented in 1844, the Pratt truss incorporates vertical members in compression and diagonal members in tension, a design that reduces the required length of compression members, helping to prevent bending or buckling. It became the most common bridge truss type of the late nineteenth and early twentieth centuries and spawned numerous variations including Parker, Camelback, Truss Leg Bedstead, Baltimore, Lenticular, and Pennsylvania trusses.[5]

The Truss Leg Bedstead is a Pratt pony truss with vertical end posts that extend below the end floor beams and are embedded into foundation pads or abutments, thus forming the namesake "legs" of the design. This variation of the standard Pratt truss design was intended for short spans between 30 and 100 feet. The Truss Leg Bedstead bridge type was widespread and continued to be constructed into the twentieth century in Kansas, indicating the appeal of its simplicity and economical construction costs. In 1998, approximately 375 Truss Leg Bedstead bridges, including the Sand Creek Truss Leg Bedstead Bridge, existed throughout the state of Kansas.[6]

STRUCTURE HISTORY

First settled in 1873, the nearby town of Lenora was the thriving western terminus of the Central Branch of the Union Pacific Railroad. Named in honor of Mrs. Lenora Hauser, the town featured both a post office and a store by 1875. Lenora had only 125 residents in 1880, but as a regional trading center supported three general merchandise stores, three physicians, two hotels, two mills, two shoemakers, two livery stables, a barber shop, a billiard hall, a lumberyard, a meat market, a restaurant, a blacksmith, a hardware store, a drug store, a wagon

[4] Ibid, F.
[5] T. Allan Comp and Donald Jackson, *Bridge Truss Types: A guide to dating and identifying.* (Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95), 8.
[6] Nimz, 6.

maker, a lawyer, a flour store, and a newspaper office.[7] Typical of small towns throughout Kansas, it served as a trading and shipping point for the surrounding rural community. As a result, fords and bridges that provided area farmers with access to local markets were critical to the survival of the regional economy.

The Canton Bridge Company of Canton, Ohio built the Sand Creek Truss Leg Bedstead Bridge in 1906.[8] Markings on the structural members indicate that the Canton Bridge Company purchased the stock metal from the Jones & Laughlins Steel Corporation of Pittsburgh, Pennsylvania. A prolific out-of-state bridge builder in Kansas, the Canton Bridge Company heavily marketed short-span truss bridges in this region at the turn of the century.[9] No further construction history has presently been located.[10]

The Canton Bridge Company of Canton, Ohio advertised in *Engineering Record* as early as 1876 and was incorporated in 1891.[11] The executives in 1891 included W. E. Sherlock, President; V. H. Hammond, Vice President; and C. E. Timkler, Chief Engineer.[12] Massillion Steel Joist Company of Massillion, Ohio purchased the company in 1925 and the two companies were merged into Macomber Steel Company in 1927.

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[7] William G. Cutler, *History of the State of Kansas: Norton County.* (Chicago: A. T. Andreas, 1883).
[8] An identification plaque affixed to the bridge states the bridge company; Norton County Road and Bridge records state the construction date.
[9] Larry Jochims, *West Sappa Creek Lattice Bridge, National Register of Historic Places Registration Form*, (Topeka: Kansas State Historical Society, 1989
[10] Inquiry into the Norton County Road and Bridge records, Kansas Department of Transportation records, Kansas State Historical Society archives, Norton County Historical Society archives, and *Western Contractor* revealed no further construction history specific to the Sand Creek Truss Leg Bedstead Bridge.
[11] Jochims, *West Sappa Creek Lattice Bridge.*
[12] Ibid. It is likely that V. H. Hammond is a relation of D. Hammond of Wrought Iron Bridge Company in Canton, Ohio.

BIBLIOGRAPHY

Comp, T. Allan and Donald Jackson. *Bridge Truss Types: A guide to dating and identifying.* Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95.

Cutler, William G. *History of the State of Kansas.* Chicago: A. T. Andreas, 1883.

Delaware Historic Bridges, Survey and Evaluation. Historic Architecture and Engineering Series, No. 89. Dover: Delaware Department of Transportation, Division of Highways, 1991.

Historic Highway Bridges in Pennsylvania. Harrisburg: Pennsylvania Department of Transportation and Pennsylvania Historical and Museum Commission, 1986.

"Industrial Images from the Library of Congress," *Illustrated Pittsburgh Retrospective* [article on-line]; available from **http://www.andrew.cmu.edu/user/vck/pghretro.htm**; Internet; accessed 18 March 2002.

Jochims, Larry. *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form.* Topeka: Kansas State Historical Society, 1989.

Jochims, Larry. *West Sappa Creek Lattice, National Register of Historic Places Registration Form.* Topeka: Kansas State Historical Society, 1989.

Kansas Historic Bridge Rating System. Kansas Department of Transportation, 1980-1983.

Nimz, Dale E. *Activity III Review Initial Assessment Metal Truss Bridges.* Topeka: Kansas State Historical Society, 1998.

Second Ohio Historic Bridge Inventory, The; Evaluation and Preservation Plan. Columbus: Ohio Department of Transportation, 1990.

Vermont Truss Bridges and Maintenance. Vermont Bridge Program, 2000.

WPA Guide to 1930s Kansas. Lawrence: University of Kansas Press, 1984.

GEOGRAPHICAL DATA

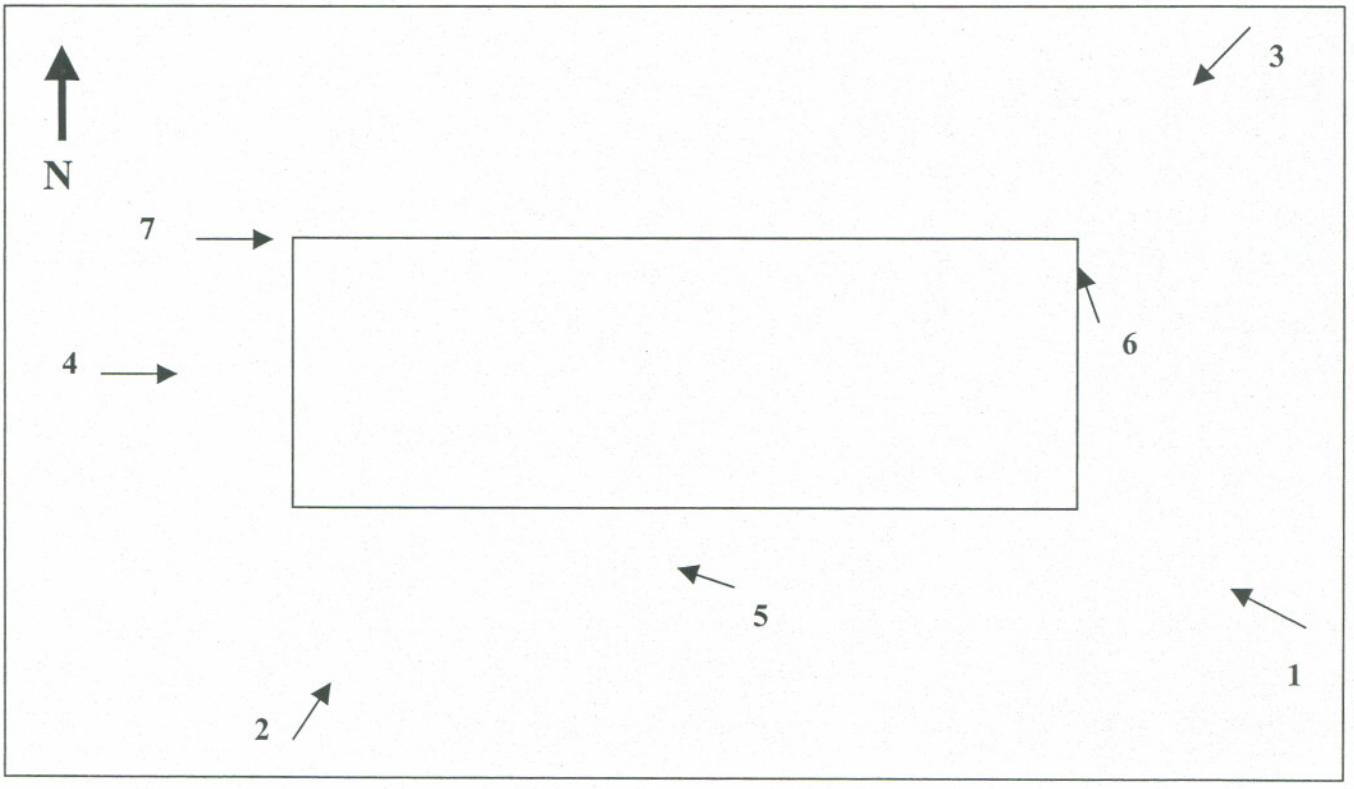
Verbal Boundary Description:
Located on the line between the NW ¼ of Section 3, Township 5S and the SW ¼ of Section 34, Township 4S, Range 23 W, the Sand Creek Truss Leg Bedstead Bridge encompasses an area measuring approximately 64 feet by 16 feet. The northwest corner of this area corresponds to the northwest corner of the bridge.

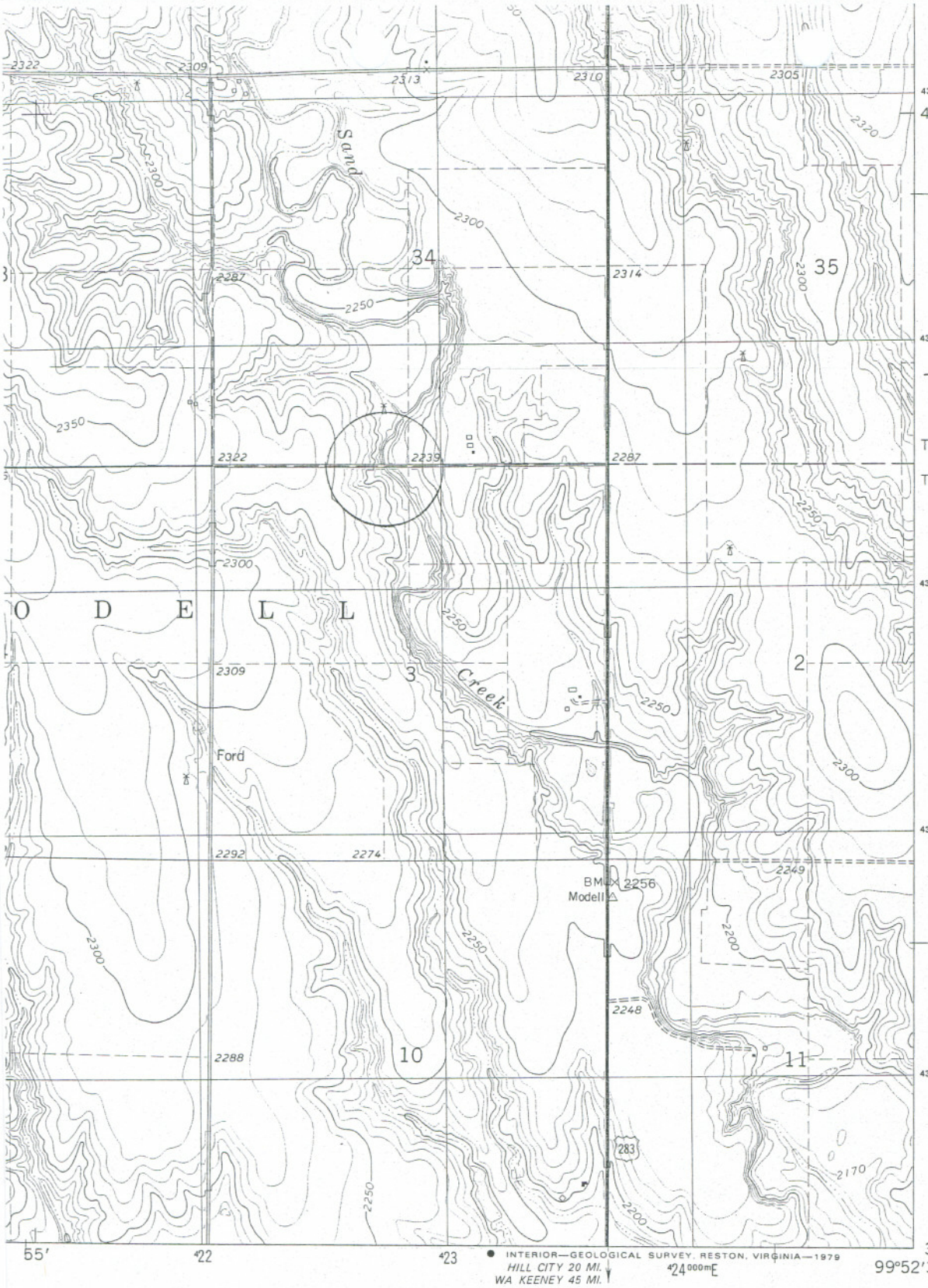
Boundary Justification:
The boundary includes the truss, deck, abutments, and associated approaches that represent the significant features associated with the bridge structure.

PHOTO LOG

Photographer: Kerry Davis
Date of Photographs: February 2002
Location of Original Negative: Kansas State Historical Society, Topeka, Kansas

Photograph Number	Camera View
1.	View NW, bridge truss and abutments
2.	View NE, bridge truss and abutments
3.	View SW, bridge truss and abutments
4.	View E, bridge truss along roadway
5.	View NW, bridge understructure and west abutment
6.	View NW, upper node detail
7.	View E, plaque detail





SAND CREEK
TRUSS VER BEDSTEAD
BRIDGE

NORTON CO., KANSAS

UTM REFERENCE:

14/422760/4389500

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1979

HILL CITY 20 MI.
WA KEENEY 45 MI.

ROAD CLASSIFICATION

Primary highway, hard surface

Secondary highway, hard surface

Light-duty road, hard or improved surface

Unimproved road

Interstate Route U. S. Route State Route

KANSAS

QUADRANGLE LOCATION

(EDMOND SE)
6063 III SE

EDMOND NW, KANS.

N3937.5—W9952.5/7.5

1978